Non-Medicaid enhanced prenatal care programs for African-American women

Health Care: Maternal and Infant Health

Benefit-cost estimates updated May 2017. Literature review updated December 2016.

Current estimates replace old estimates. Numbers will change over time as a result of model inputs and monetization methods.

The WSIPP benefit-cost analysis examines, on an apples-to-apples basis, the monetary value of programs or policies to determine whether the benefits from the program exceed its costs. WSIPP's research approach to identifying evidence-based programs and policies has three main steps. First, we determine "what works" (and what does not work) to improve outcomes using a statistical technique called meta-analysis. Second, we calculate whether the benefits of a program exceed its costs. Third, we estimate the risk of investing in a program by testing the sensitivity of our results. For more detail on our methods, see our Technical Documentation.

Program Description: Non-Medicaid enhanced prenatal care programs for African-American women provide psychosocial support and health education regarding risk reduction. Some programs also include case management and nutritional counseling. Services are provided by paraprofessionals or nurses. Participants typically receive the program for five months, including prenatal and postpartum services. All women in treatment and comparison groups receive clinical prenatal care (treatment as usual).

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$561
Participants	$279
Others	$442
Indirect	$2,074
Total benefits	$3,355
Net program cost	($592)
Benefits minus cost	$2,763

Benefit to cost ratio	$5.66
Benefits minus costs	$2,763
Chance the program will produce benefits greater than the costs	69 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2016). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Health care associated with Cesarean sections	$3	$82	$82	$41	$209
Health care associated with low birthweight births	$0	($2)	($2)	($1)	($6)
Subtotals	$3	$80	$80	$40	$203
From secondary participant					
Infant mortality	$261	$118	$0	$2,149	$2,528
Health care associated with low birthweight births	($1)	($20)	($20)	($10)	($50)
Health care associated with NICU admissions	$16	$382	$382	$192	$970
Subtotals	$276	$481	$362	$2,331	$3,449
Adjustment for deadweight cost of program	$0	$0	$0	($297)	($297)
Totals	$279	$561	$442	$2,074	$3,355

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

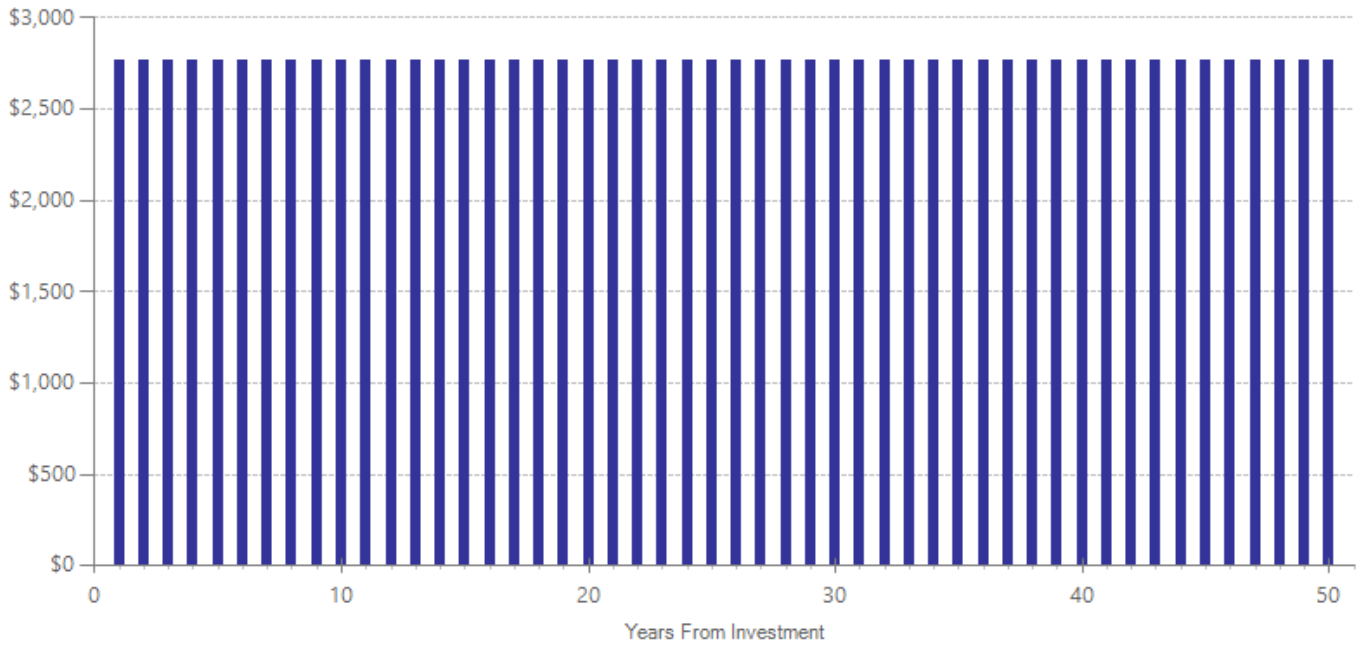
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$1,967	2014	Present value of net program costs (in 2016 dollars)	($592)
Comparison costs	$1,383	2014	Cost range (+ or -)	15 %

Per-participant program cost estimates are based on average costs for included studies. We estimate provider hours, apply the mean hourly wage estimate for Washington State reported by the Bureau of Labor Statistics (September 2016) for the appropriate provider, and increase wages by a factor of 1.441 to account for the cost of employee benefits. Studies averaged ten provider hours, and providers varied (paraprofessionals or nurses). Both groups receive treatment as usual. The costs of treatment as usual are the average costs of usual prenatal care in Washington State (Washington State Department of Health, September 2016).

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the "break-even" point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Primary or secondary participant	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Cesarean sections	Primary	1	311	-0.158	0.136	23	0.000	0.000	24	-0.158	0.248
Low birthweight births***	Primary	4	1432	0.015	0.086	23	0.000	0.000	24	-0.031	0.759
Preterm birth (< 37 weeks)***	Primary	1	311	-0.192	0.151	23	0.000	0.000	24	-0.192	0.203
Very low birthweight birth (< 1500g)***	Primary	1	669	-0.199	0.142	23	0.000	0.000	24	-0.199	0.161
Low birthweight births***	Secondary	4	1432	0.015	0.086	1	0.000	0.000	2	-0.031	0.759
NICU admission	Secondary	1	311	-0.234	0.149	1	0.000	0.000	2	-0.234	0.115
Preterm birth (< 37 weeks)***	Secondary	1	311	-0.192	0.151	1	0.000	0.000	2	-0.192	0.203
Very low birthweight birth (< 1500g)***	Secondary	1	669	-0.199	0.142	1	0.000	0.000	2	-0.199	0.161

***We report this outcome twice: once for mothers (designated as the primary participant) and once for infants (designated as the secondary participant). We do this because the outcome is associated with costs and benefits for both mothers and infants, and the amount of the cost or benefit is different for mothers than it is for infants.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Herman, A.A., Berendes, H.W., Yu, K.F., Cooper, L.C., Overpeck, M.D., Rhoads, G., . . . Coates, D.L. (1996). Evaluation of the effectiveness of a community-based enriched model prenatal intervention project in the District of Columbia. *Health Services Research, 31*(5), 609-21.

Klerman, L.V., Ramey, S.L., Goldenberg, R.L., Marbury, S., Hou, J., & Cliver, S.P. (2001). A randomized trial of augmented prenatal care for multiple-risk, Medicaid-eligible African American women. *American Journal of Public Health, 91*(1), 105-11.

Norbeck, J.S., DeJoseph, J.F., & Smith, R.T. (1996). A randomized trial of an empirically-derived social support intervention to prevent low birthweight among African American women. *Social Science & Medicine, 43*(6), 947-954.

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